DOCUMENT RESUME

ED 366 797 CE 065 701

AUTHOR Lee, Lung-Sheng
TITLE Technology Education and Related International Exchange Programs in Taiwan, Republic of China.
PUB DATE Mar 94
NOTE 16p.; Paper presented at the Annual Conference of the International Technology Education Association (Kansas City, MO, March 20-23, 1994).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Educational Attitudes; *Educational Trends; Foreign Countries; *Industrial Arts; *International Educational Exchange; Postsecondary Education; Secondary Education; *Technology Education; Vocational Education
IDENTIFIERS *Taiwan

ABSTRACT

This paper presents a short overview of industrial arts and technology education programs in Taiwan and the exchange programs available to international technology educators. The first section profiles the status of Taiwan and its educational system, and the second section describes the industrial arts programs prescribed by the curriculum, identifies three main problems that afflict industrial arts in Taiwan, and points out the trend for industrial arts to shift toward technology education. The three main problems identified are as follows: industrial arts is seen as a subordinate subject, the public's perceptions are not aligned with the field, and teachers are struggling with huge class sizes and limited teaching resources. The third section of the paper examines the exchange opportunities available to international technology educators, especially those provided by two foundations, the Chiang Ching-Kuo Foundation and the Pacific Cultural Foundation. (KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 366 797

Technology Education and Related International Exchange Programs in Taiwan, Republic of China

Lung-Sheng Lee

National Taiwan Normal University
Professor, Department of Industrial Arts Education
Research Section Chief, Center for Educational Research

Paper Presented at
the International Technology Education Association (ITEA)
56th Annual Conference in
Kansas City, Missouri, March 20-23, 1994

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

L. Lee

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CE 065 701

BEST COPY AVAILABLE

Abstract

The purpose of this paper is to present the state of art of industrial arts/technology education programs in Taiwan and such exchange programs available to international technology educators. It is pointed out that: (1) there are three main problems currently afflicting industrial arts in Taiwan, namely that industrial arts is seen as a subordinate subject, the public's perceptions are not aligned with the field, and teachers have struggled with huge class sizes and limited teaching resources; (2) industrial arts is currently shifting to technology education; (3) there is a variety of exchange opportunities available to international technology educators; and (4) the Chiang Ching-Kuo Foundation (CCF) and the Pacific Cultural Foundation (PCF) routinely provide grants for international scholars to work on Chinese/ Taiwanese studies.

An Overview of Taiwan's Educational System

The Republic of China on Taiwan (henceforth called the R.O.C. or Taiwan), shaped like a sweet potato, is located in the far western Pacific (see Figure 1). The basic data shown in Table 1 indicate that Taiwan's economy is a typical island economy where economic growth must overcome such severe disadvantages as high population density, small domestic market, and scarcity of natural resources. In fact, over the past forty some years, Taiwan has enjoyed steady and rapid economic growth, sustained price stability, and equitable income distribution. One of the prominent factors contributing to Taiwan's economic success has been a diligent and highly educated labor force.

Figure 1. The location of Taiwan, R.O.C. (Government Information Office, 1993).

Table 1
Basic Data of Taiwan, R.O.C.

Population: over 20,752,000 (February, 1993)

Area (Taiwan Island and over 80 other islands): 36,119 sq. km (slightly larger than Massachusetts, Rhode Island and Connecticut combined or about one eleventh the size of the state of California)

Climate: subtropical in the north and tropical in the south; temperatures ranging from about 28°C (82.4°F) in July to 14°C (57.2°F) in November

Language: Mandarin Chinese. Many other dialects are spoken; English and Japanese can often be heard in major cities.

Per Capita Income: US$8,083 (1991)

School or Academic Year: August through July

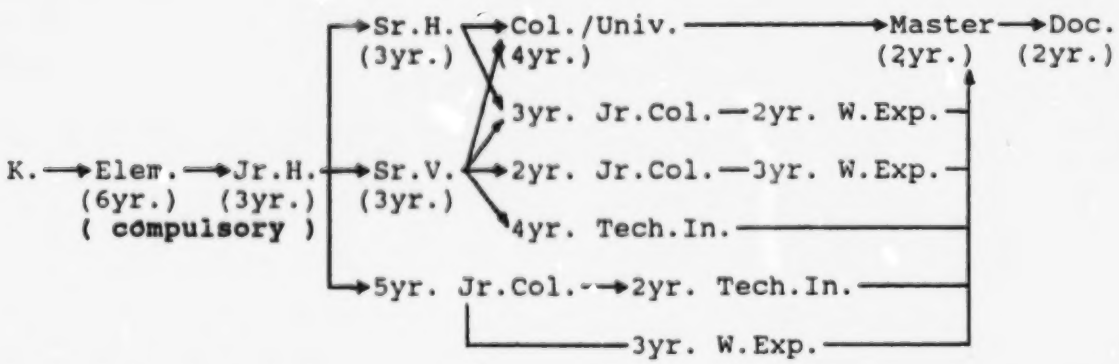
Duration of Schooling: 6 + 3 + 3

Compulsory Schooling: 9 years (ages 6-15)

Educational Enrollment Rates by School-Aged Population Group (%) (1991):	Levels and Ages			
	Kindergarten (3-5)	Primary (6-11)	Secondary (12-17)	Tertiary (18-21)
	24	100	95	38

Figure 2 illustrates Taiwan's current educational system. The nine-year compulsory education system has been in place for the past quarter century and is the core of today's educational system in Taiwan. This consists of six-year elementary schools and three-year junior high schools[1]. Beyond these schools are two parallel three-year institutions--senior high schools and senior vocational schools. The ratio of senior high school students to senior vocational school students is about 3 : 7 at this time. Junior colleges can be categorized into three types: two-year, three-year, and five-year programs. University

programs last four to seven years, depending on variations within departments. Technology colleges offer two kinds of programs: two-year programs for junior college graduates and four-year programs for senior vocational school graduates. At the graduate level, the minimum length of study for a master's degree is two years, with an additional two years as the minimum required to earn a doctorate. Entrance examinations are required for admission to schools beyond the level of the nine-year compulsory education. The entrance examinations for some preferred senior high schools and all colleges/universities admissions are very competitive[2]. These competitive examinations put intense pressure on students and even their parents.



Legend:

Col.	: Colleges	Doc.	: Doctor
Elem.	: Elementary	Exp.	: Experience
H.	: High	In.	: Institutes
Jr.	: Junior	K.	: Kindergarten
Sr.	: Senior	Tech.	: Technology
Univ.	: Universities	V.	: Vocational
W.	: Work	yr.	: year(s)

Figure 2. The School System of Taiwan, R.O.C. (Ministry of Education, 1993).

Industrial Arts Is in Transition

In Taiwan, curricula for elementary, junior high, and senior high schools are promulgated by the Ministry of Education. According to current elementary, junior high and senior high curriculum standards, industrial arts/technology education can be briefed as shown in Table 2. For preparing elementary-school craft work and secondary-school industrial arts teachers, there are nine teachers college departments of craft work education and two normal university departments of industrial arts education in Taiwan. Each department provides both pre-service and in-service school teacher training programs. In terms of the pre-service program, students are admitted following successful performance on the annual College Joint Entrance Examination (CJEE), administered to graduating senior-high students. During their five-year period of study in the program, students enjoy a four-year tuition-waiver and living expenses in their colleges or universities. One additional year is spent in elementary or secondary schools in a teaching internship. In addition to the above educational programs, there is an industrial arts professional association called the Chinese Industrial Arts Education Association (CIAEA). The two most important activities of this association are its yearly recognition of outstanding industrial arts educators and an annual convention.

Table 2
A Brief of Industrial Arts/Technology Education in Curriculum Standards

Level	Course Synopsis
Elementary (Grades 1 to 6)	The broad-study subject "craft work" (required, 80 hrs/yr for grades 1 and 2, and 120 hrs/yr for grades 3 to 6) consists of three domains: (1) Appreciation and Observation, (2) Presentation and Practice, and (3) Inquiry and Discussion. In the domain of Presentation and Practice, painting, sculpture, design, industrial arts, horticulture, and home making are incorporated.
Junior High (Grades 7 to 9)	All students must select either industrial arts or home economics (2 hrs/wk), but schools usually assign boys to industrial arts programs and girls to home economics. In the required industrial arts, the following 13 areas are addressed: (1) Introduction to Industrial Arts, (2) Blueprint Reading and Planning, (3) Ceramics, (4) Woodworking, (5) Plastics, (6) Metalworking, (7) Electricity, (8) Graphics Communication, (9) Construction and Life, (10) Manufacturing Industry, (11) Information Industry, (12) Audio-visual Communication, and (13) Energy and Power. In addition to the required subject, three elective courses pertaining to industrial arts--drafting, metalworking, and electronics--are also provided.
Senior High	Students in grades 10 and 11 must select either industrial arts or home economics (2 hrs/wk), but schools usually assign boys to industrial arts programs and girls to home economics. In the required industrial arts, the following five areas are addressed: (1) Project Planning and Drafting, (2) Industrial Materials, (3) Power and Energy, (4) Information Industry, and (5) Automation. In addition to the required subject, some elective courses classified as industrial arts--drafting, metalworking, woodworking, electricity, ceramics, etc.--are also provided.

In fact, in its implementation, formal/written industrial arts/technology education in Taiwan (shown in Table 2) has met with the following main challenges (Lee, 1990):

1. Industrial arts is seen as a subordinate subject

The educational value of industrial arts is not widely recognized in comparison to that of language arts, mathematics, sciences or fine arts, so secondary-school industrial arts is not included among the required subjects for advanced entrance examinations. This makes most people see industrial arts as a subordinate, unworthy subject, and causes industrial arts to lack desirable expectations and effective support.

2. The public's perceptions are not aligned with the field

The current Chinese name for industrial arts *Kung I* referred to polytechnics or technology in early Chinese society, but *Kung I* has increasingly been seen as the equivalent of handicraft since the middle of this century. Therefore, there are a variety of views of industrial arts. It is exhausting for industrial arts/technology educators to communicate the principles of industrial arts/technology education to the public and even to those craft work/industrial arts teachers and teacher educators whose educational backgrounds are in fine arts.

3. Teachers have struggled with huge class sizes and limited teaching resources

Admittedly, the instructional content of industrial arts is largely defined by activities. At present, however, each industrial arts teacher is confronted by huge class sizes (e.g., junior high classes, which had 44 students on average in the 1992 school year) and limited teaching resources (i.e., shop/ laboratory space, supplies, equipment, teaching materials, etc.).

This makes the activity curriculum hard to operate well. It is evident that industrial arts teacher instruction has extensively deviated from the ideals of the formal/written curriculum prescribed in the curriculum standards.

The above main challenges to Taiwan's industrial arts at least indicate that the current industrial arts curriculum standards are not relevant. Basically, elementary and secondary school curriculum standards are revised and promulgated about once every 10 years. At present, elementary-school craft work and secondary-school industrial arts curriculum standards are being revised, and the coming new standards are expected to be implemented in 1996. In comparison to current curriculum standards, the completed elementary-school craft work and junior-high industrial arts curriculum standard drafts incorporate the following changes:

1. Horticulture and home making will be removed from elementary-school craft work, in which fine arts will continue to be dominant.
2. The secondary-school subject "Industrial Arts" will have a name change to "Living Technology" to reflect the idea that the new industrial arts will be centered on a study of technology and should itself be focused mainly on the solution of daily problems. It has apparently been decided that the four study areas in the coming junior-high living technology curriculum standard will be: (1) Technology and Life, (2) Information and Communication, (3) Construction and

Manufacturing, and (4) Energy and Transportation.

3. All male and female students from grades 7 to 11 will be required to take living technology and home economics (2 hrs/wk in total). This means that the current industrial arts enrollment will broaden from being mainly boys to both boys and girls, but the current teaching hours of industrial arts will be cut in half (i.e., industrial arts' two hours per week will be trimmed to living technology's one hour per week).

Obviously, industrial arts in Taiwan is shifting to technology education. A successful transition needs effective ways and means. In this global village, international exchange is always needed.

Givers Are Usually Happier Than Receivers

Chinese often say, "Givers are usually happier than receivers." This suggests that Chinese believe two-way sharing (i.e., exchange) is a virtue.

Admittedly, Taiwan's industrial arts/technology education has been greatly influenced by that of the U.S.A.. For example, in 1953, under the assistance of some American specialists, the Department of Industrial Education at Provincial Taiwan Normal College (now National Taiwan Normal University) was founded in Taipei, Taiwan. Since that time, American industrial arts theory and practice has been widely introduced into Taiwan through frequent exchanges of Sino-America professional personnel and

literature. In particular, many of today's industrial arts/technology teacher educators in Taiwan obtained their terminal degrees in the U.S.A.. They keep in contact with the field of technology education in the United States. In recent years, several international symposiums, coordinated by these educators and pertaining to technology education have been held in Taiwan. Some experts from the U.S. have made important contributions to the success of these symposiums. To the author's knowledge, several international technology education conferences to be held in Taiwan are in the planning stage. In addition to international meetings, the nine departments of craft work education and the two departments of industrial arts/ technology education mentioned before are encouraged to apply for grants from government agencies such as the Ministry of Education (MOE) and the National Science Council (NSC) to ask for the assistance of international experts in research, teaching, etc.[3]

Furthermore, there are at least the following two private organizations which routinely offer international exchange opportunities to international technology educators:

1. The Chiang Ching-Kuo Foundation (CCF) for International Scholarly Exchange

CCF was established to promote the study of Chinese culture and society. The scope of this Foundation's program includes, but is not limited to: Chinese cultural heritage, classical studies (especially literary and historical works), the Republic of China (including any subject related to the Republic of China,

its development and transformation since its establishment, through the Nanking Period, and up to the present), Taiwan studies (including its history and archaeology as well as socioeconomic, political and cultural aspects), and China-related comparative studies. CCF welcomes applications[4] in the following categories: institutional enhancement, research grants, conferences and seminars, subsidies for publication, senior scholar grants, assistant/associate professor grants, travel grants, dissertation fellowships for R.O.C. students abroad, CCK fellowships for Ph.D. dissertations and post-doctoral research, the Walter Judd Research Fellowship, and cooperative guidance grants. In accordance with CCF policy, scholarly cooperation between institutions in Taiwan and institutions overseas is highly encouraged.

2. The Pacific Cultural Foundation (PCF) Chinese Studies

PCF was established to promote academic and cultural exchange and to nurture further understanding among the peoples and countries in the Pacific and other regions throughout the free world. Thus, one of the services PCF provides is to award to qualified international persons four types of grants, research, writing, publications, and seminars, in order to encourage foreign scholars to study Chinese culture, history, and contemporary problems. Applications[5] are reviewed by a screening committee. Since 1993, twice-a-year application deadlines have been March 1st and September 1st. In 1992, 78 PCF Chinese Studies Grants were approved, and 50 of them were Research

grants.

Summary

This paper has presented the state of the industrial arts/technology education programs in Taiwan and their exchange programs available to international technology educators. The first section gave an overview of the status of Taiwan, R.O.C., and its educational system. The second section described the industrial arts programs prescribed in the curriculum standards, identifies three main problems that afflict industrial arts in Taiwan, i.e., that industrial arts is seen as a subordinate subject, that the public's perceptions are not aligned with the field, and that teachers have struggled with huge class sizes and limited teaching resources, and pointed out the trend wherein industrial arts is currently shifting to technology education. The third section explained the exchange opportunities available to international technology educators. The opportunities routinely provided by two foundations, the Chiang Ching-Kuo Foundation (CCF) and the Pacific Cultural Foundation (PCF), were especially introduced.

References

Government Information Office. (1993). An introduction to the Republic of China on Taiwan (2nd ed.). Taipei, Taiwan: Author.

Lee, L. S. (1990). A perspective of technology education in Taiwan, Republic of China. Journal of Technology Education, 2(1), 18-27.

Ministry of Education. (1993). Educational statistics of the Republic of China 1993. Taipei, Taiwan: Author.

Footnotes

1. In 1993, the R.O.C. Executive Yuan approved a proposed 10-year national education plan that would extend the current system currently in use in Taiwan by one year in 1996. This additional one-year program will be vocationally-oriented and assigned to those junior high school graduates who are unwilling to or unable to continue to study at the upper-secondary level schools.

2. In 1992, for example, 119,950 applicants took the University and College Joint Entrance Examination (CJEE), and only 52,494 (43.76 percent of the total applicants) were admitted to one of the day-session programs in universities or colleges.

3. International technology educators who are interested in exchange programs are encouraged to contact the following departments: (1) National Taiwan Normal University, College of Fine and Applied Arts, Department of Industrial Arts Education, 162 Hoping E. Rd., Sec. 1, Taipei, Taiwan, R.O.C. (TEL: 8862-394-2640, FAX: 8862-392-1015); (2) National Kaohsiung Normal University, College of Education, Department of Technology Education, 116 Hoping Rd., Sec. 1, Kaohsiung, Taiwan, R.O.C. (TEL: 8867-717-2930 Ext. 380, FAX: 8867-711-4804).

4. All applicants should use the forms available from the Chiang Ching-kuo Foundation for International Scholarly Exchange, Suite 131, Van Ness Center, 4301 Connecticut Ave. NW, Washington, DC. 20008 (TEL: 202-362-2914, FAX: 202-362-2935). The annual applications process begins on June 1 and ends on October 15. Decisions are announced in May of the next year.

5. In order to apply for research, writing, or publications grants, the applicant must hold at least a master's degree and may be a citizen of any country except the Republic of China. General inquires and requests for application materials should be addressed to the Pacific Cultural Foundation, Suite 807 Palace Office Building, 346 Nanking East Road, Sec. 3, Taipei, Taiwan, R.O.C. (TEL: 8862-752-7424, FAX: 8862-752-7429).